AMENDMENTS TO THE CLAIMS

1. (Previously presented) A method for determining the maximum acceleration limits for the longitudinal or lateral axis of an aeronautical vehicle while maintaining a constant vertical state, said vehicle having a vertical control inceptor, said method comprising:

determining at least one vertical inceptor position required to maintain a vertical state via a controller, wherein said at least one vertical inceptor position is a predicted position based on vehicle performance and operator inputs;

determining maximum allowable vertical inceptor position limits for desired operation of the vehicle that allow maintaining said vertical state; and

determining the maximum acceleration limits for the longitudinal or lateral axis corresponding to the maximum allowable vertical inceptor position limits.

2. (Previously presented) The method as stated in claim 1 wherein said maximum acceleration limits are pitch and/or roll attitude limits.

3. (Previously presented) The method as stated in claim 1 wherein said maximum acceleration limits are predicted increases or decreases in pitch and/or roll attitude limits.

4. (Previously presented) The method as stated in claim 1 wherein said maximum acceleration limits are represented as control inceptor position limits.

5. (Previously presented) The method as stated in claim 1 wherein said maximum acceleration limits are provided as tactile cues.

6. (Previously presented) The method as stated in claim 1 wherein said maximum acceleration limits are provided through an active force cueing system.

7. (Withdrawn) The method as stated in claim 1 wherein said maximum acceleration limits are cued through an aural, visual or tactile cueing system.

8. (Previously presented) The method as stated in claim 1 wherein said maximum acceleration limits are provided to a software limiting system.

9. (Previously presented) The method as stated in claim 1 wherein said maximum acceleration limits are based on the transfer of potential and kinetic energy.

10. (Withdrawn) The method as stated in claim 1 wherein said maximum acceleration limits are based on the potential change in vertical velocity.

11. (Previously presented) The method as stated in claim 1 wherein said maximum acceleration limits are determined using at least two methods, and the most restrictive result from the two methods are utilized.

12. (Original) The method as stated in claim 1 wherein said vertical state is holding constant vertical altitude.

13. (Withdrawn) The method as stated in claim 1 wherein said vertical state is holding constant vertical velocity.

14. (Withdrawn) The method as stated in claim 1 wherein said vertical state is holding constant flight path angle.

15. (Previously presented) The method as stated in claim 1 wherein said maximum acceleration limits are determined by the rotor torque required to balance the gravitational forces for non-zero pitch or roll attitude.

16. (Cancelled)

17. (Withdrawn-Previously Presented) The method as stated in claim 1 wherein said at least one vertical inceptor position is further based on a feedback loop of error between the desired vertical state and the measured performance.

18. (Cancelled)

19. (Withdrawn) The method as stated in claim 1 wherein said maximum vertical inceptor position limits are based on feedback between known limits and measured performance.

20. (Withdrawn) The method as stated in claim 1 wherein said maximum vertical inceptor position limits are based on one or more of the following group comprising:

transmission torque, engine torque, main rotor torque, main rotor overspeed, main rotor underspeed, main rotor stall, encroachment upon vortex ring state conditions, encroachment upon power setting condition, vertical velocity limits, actuator position limits and actuator rate limits.

21. (Previously presented) A method for maintaining a constant vertical state of an aeronautical vehicle with a vehicle controller, said method comprising the steps of:

determining a plurality of operating parameters for the aeronautical vehicle, said operating parameters being selected from the group comprising airspeed, torque, rotor speed, pitch attitude, roll attitude, vertical velocity, and rate of change of altitude;

providing said determinations of said plurality of operating parameters to the vehicle controller;

determining the maximum and minimum limits of each of said plurality of operating parameters;

providing said determined maximum and minimum limits to the vehicle controller; and

preventing said determined maximum and minimum limits from being exceeded in the aeronautical vehicle by the vehicle controller.

22-45. (Cancelled)

46. (Currently Amended) The method of cueing a vehicle operator of maximum accelerations and decelerations that may be performed during a constant vertical state without disengagement therefrom comprising:

generating an airspeed signal;

generating an attitude signal;

generating a vertical velocity signal;

generating a torque signal;

determining at least one vertical inceptor position to maintain a vertical state in response to said vertical velocity signal and said torque signal; and

generating a cueing signal to maintain a constant vertical state in response to said airspeed signal, said attitude signal, a minimum inceptor position, and a maximum inceptor position.

47. (Cancelled)

48. (Currently amended) The method as in claim 46 further comprising: ~~wherein generating said cueing signal,~~ determining the amount of vertical velocity change in response to

changes in inceptor position; ~~and~~ <u>determining</u> the amount of torque change ~~are determined~~ in response to changes in inceptor position<u>; and generating said cueing signal to maintain the constant vertical state in response to said amount of vertical velocity change and said amount of torque change</u>.

49. (Original) A method as in claim 46 further comprising:

generating a control inceptor position signal; and

generating said cueing signal to maintain the constant vertical state in response to said control inceptor position signal.

50. (Previously presented) A method as in claim 46 wherein generating a cueing signal comprises determining a maximum change in pitch attitude and a maximum change in roll attitude using conservation of energy based relationships.

51. (Original) A method as in claim 46 wherein generating a cueing signal comprises determining a maximum change in pitch attitude and a maximum change in roll attitude using thrust and gravitational force based relationships.

52. (Original) A method as in claim 46 wherein generating a cueing signal comprises:

determining a first maximum change in pitch attitude and a first maximum change in roll attitude using a conservation of energy relationship;

determining a second maximum change in pitch attitude and a second maximum change in roll attitude using a thrust and gravitational force based relationship;

comparing said first maximum change in pitch attitude to said second maximum change in pitch attitude and cueing which ever maximum change in pitch attitude that is smaller in magnitude; and

comparing said first maximum change in roll attitude to said second maximum change in roll attitude and cueing which ever maximum change in roll attitude that is smaller in magnitude.

53. (Original) A method as in claim 46 wherein when generating a cueing signal a minimum nose down pitch attitude for traveling velocities less than a predetermined velocity is used.

54. (Original) A method as in claim 46 wherein when generating a cueing signal a negative maximum acceleration limit is used when a current flight path angle has caused a vertical maneuvering limit to be exceeded.

55-69. (Cancelled)

70. (Previously presented) The method as stated in claim 1 wherein said maximum vertical inceptor position limits are based on predictions of vehicle performance.

71–73. (Cancelled)